US-PAT-NO: 5519529

DOCUMENT-IDENTIFIER: US 5519529 A

TITLE: Infrared image converter

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Detailed Description Text - DETX (5):
Each QW optical modulator pixel in the array 500 advantageously comprises a plurality of undoped QWs disposed between an n-type contact and a p-type contact to form a p-i-n diode or between two n-type contact to form an n-i-n modulator. The modulator substrate 600 can be advantageously removed using chemo-mechanical polishing if the substrate 600 is not transparent to light at the operating wavelength of the QW modulator. The removal of the substrate 600 will also advantageously minimize strain in the QW optical modulator array due to thermal-expansion-coefficient mismatch between the modulator array and the electronics section, as described above for the QWIP.

Detailed Description Text - DETX (19):
The QW modulator section 500' advantageously contains a plurality of undoped QWs 510' disposed between an n-type contact layer 520' and a p-type contact layer 530', thus forming the intrinsic (i) region of a p-i-n diode. It will be appreciated that the contact layer 530' could be doped n-type to form an n-i-n optical modulator if it is necessary to modify the resistance of the modulator section as described below for other embodiments of Applicants' invention.

Detailed Description Text - DETX (30):
For an MWIR QWIP having the structure described above, resistances ranging from 1.times.10.sup.10 ohms to 1.times.10.sup.11 ohms have been measured at 80K; these are comparable to the effective resistance of a reverse-biassed p-i-n diode, i.e., the resistance of the QW modulator section 500'. The fractional change in resistance of the QWIP 100' measured by changing

the input
image from a 300-K blackbody to a 500-K blackbody was found for one
sample to
be about 0.37 at a QWIP bias of four volts.